National Casemix Office
HRG4

NHS
The Information Centre
for health and social care

HRG4 Grouper
Reference Manual

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Contents

1 Quick Start 1
1.1 Download and Install the Grouper 1
1.2 Grouping Walkthrough Using Sample Data 1
2 Grouping Your Own Data 4
3 Record Definition File (RDF) 5
3.1 Using the Record Definition File Wizard to Create a Custom RDF 5
3.2 Record Definition File Editor 6
4 Command Line Initiation 8
5 Secondary Uses Service Grouping 9
6 Additional Features 10
6.1 Single Spell Grouping 10
6.2 The Internal File Viewer 10
6.3 Grouper Priority 11

Annex A Input File Preparation 1
A1 Admitted Patient Care 1
A2 Non-Admitted Consultations 3
A3 Emergency Medicine 4
A4 Renal Dialysis (National Renal Dataset) 5
A5 Adult Critical Care 6
A6 Paediatric Critical Care 7
A7 Neonatal Critical Care 8

Annex B Output Files 1
B1 Admitted Patient Care 2
B2 Non-Admitted Consultations 8
B3 Emergency Medicine 10
B4 Renal Dialysis (National Renal Dataset) 12
B5 Adult Critical Care 14
B6 Paediatric Critical Care 16
B7 Neonatal Critical Care 18

Annex C Reference Costs Reports 1
C1 Admitted Patient Care Episode Reports 2
C2 Admitted Patient Care Spell Reports 5
C3 Non-Admitted Care Reports 7
C4 Emergency Medicine Reports 7
C5 Adult Critical Care Reports 7

Annex D Errors 1

1 Quick Start

This section is intended to provide a brief overview of downloading, installing and starting to use the HRG4 Grouper application. For more detailed information, you are advised to read the whole manual.

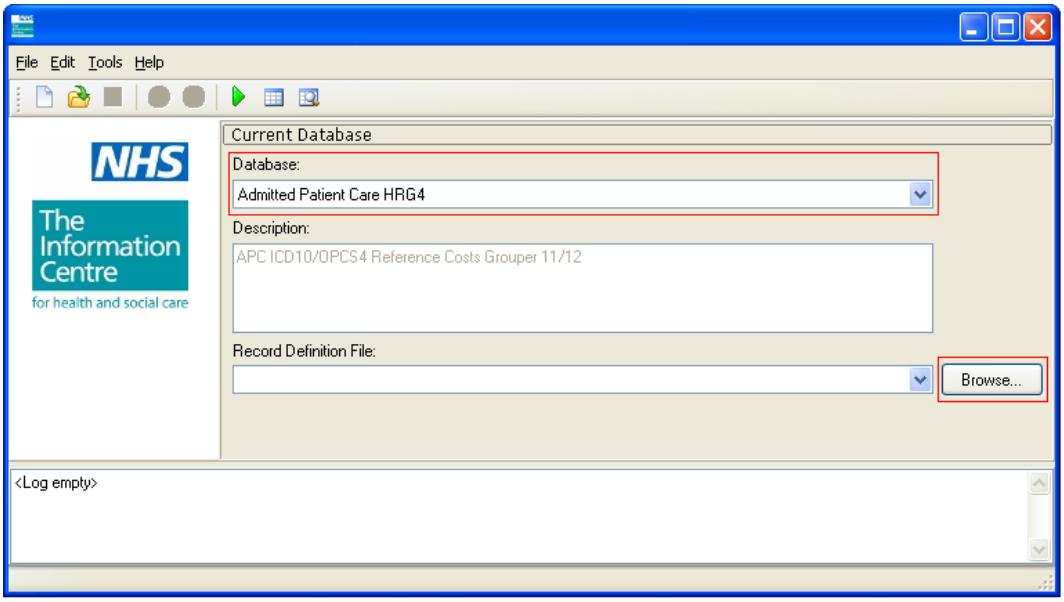
1.1 Download and Install the Grouper

1) Go here www.ic.nhs.uk/casemix/downloads.
2) Click on either **Payment** or **Costing** for the type of the grouper you need. Older versions are in the archives.
3) For payment groupers, there may be more than one version available; pick the version you need.
4) Click on the Grouper application link in the Download section at the right of the screen.
5) Save the Zip file to an appropriate location on your computer.
6) Open the Zip file and extract the Grouper application.
7) Double-click the Grouper application file and follow the installation setup wizard.

1.2 Grouping Walkthrough Using Sample Data

The following walkthrough describes the process of grouping a sample Admitted Patient Care (APC) input file, available from the Casemix website.

1) Download the sample APC input file from the bottom of this page: www.ic.nhs.uk/hrg4groupermanual.
2) Open the Grouper application.
3) Select **Admitted Patient Care HRG4** in the **Database** drop-down list. Other grouping types available can be seen in the drop down.
4) Click the **Browse…** button next to the **Record Definition File** (RDF) drop-down list.



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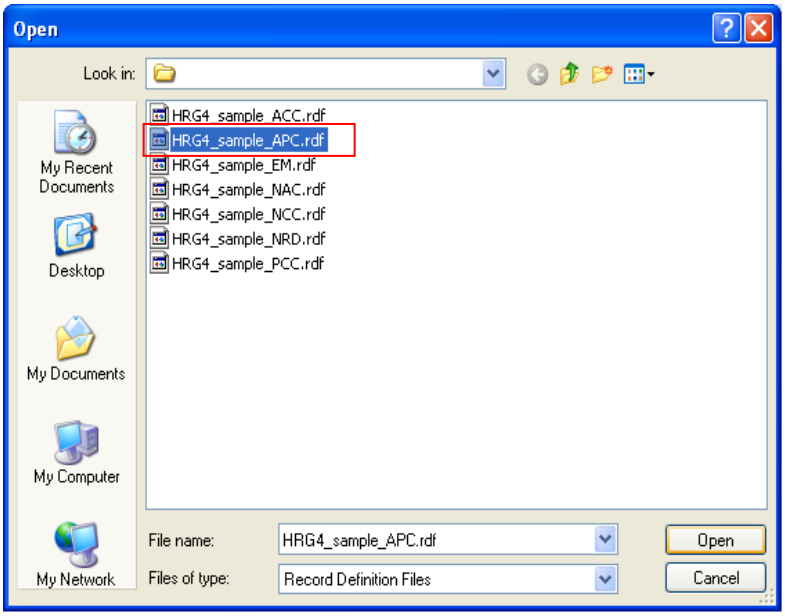
5) In the ‘Open’ form, browse for the Sample RDF. The sample RDFs are located in the Grouper’s installation folder.

6) Open the file ‘`HRG4_sample_APC.rdf`’. An alternative sample RDF file should be used for other grouping database selections. The database selection and RDF file should match.



7) From the **Tools** menu select **Process File…**

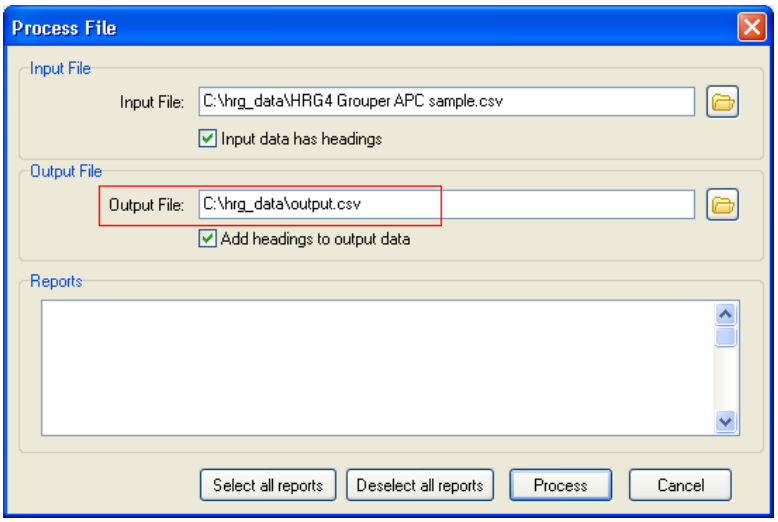
8) Click the browse button (folder icon) to the right of the **Input File** field.

9) In the ‘Open’ form, browse to and select the downloaded sample input file.

10) Click **Open**.

11) Ensure that the **Input data has headings** box is checked.

12) Click the browse button (folder icon) next to the **Output File** field.



13) In the ‘Save As’ form, browse to the folder containing the input file and type ‘output’ (or anything similarly appropriate) in the **File name** box.

14) Click **Save**. The path and filename of the output file are displayed in the **Output File** field.

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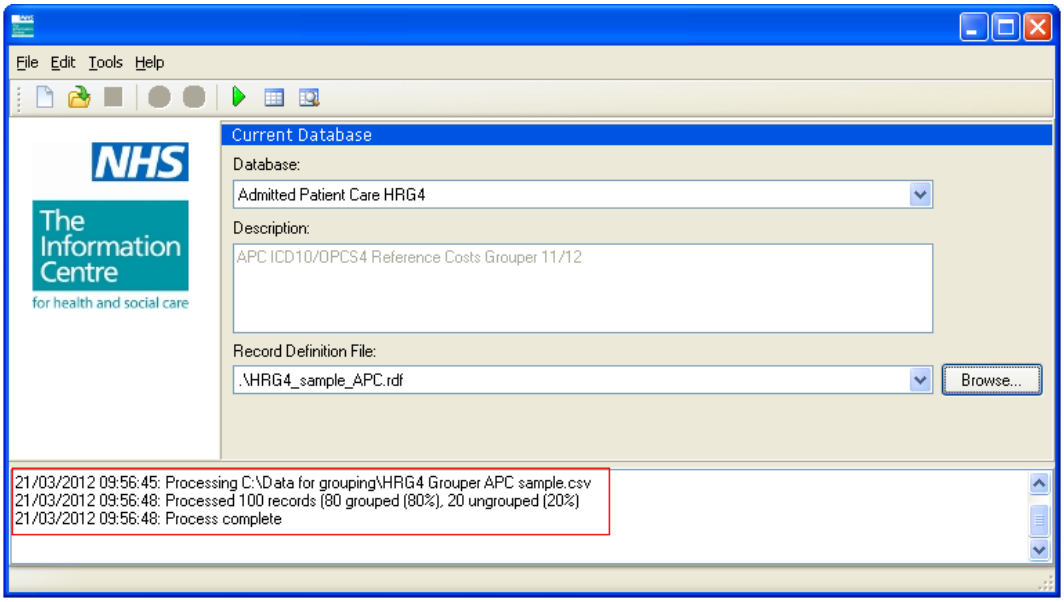
15) Ensure that the **Add headings to output data** box is checked.

16) Click the **Process** button.

When finished, the log display area shows information about the grouping session, including the number of records grouped. These details can also be found in the file hrg.log in the grouper directory.



17) Open Windows Explorer and browse to the folder specified for the output file.

18) Open the file '`output_FCE.csv`' in Microsoft Excel. The file is a copy of the input file with HRGs and other related columns appended. Other output files are explained in Annex B.

19) Scroll to the far-right of the file to view the columns that the Grouper has appended.

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2 Grouping Your Own Data

In order to group your own data you need to either:

1. Ensure that the structure of your data is identical to that as specified in an existing RDF file, or
2. Create an RDF file (see Section 3) that matches the structure of your data.

Grouping can be initiated from the front end, as shown in the quick start section, or from the command line – see Section 4. Whichever approach is used the same input rules (Annex A), grouper processing and output file structures and content (Annex B) will result.

Another approach for single records and for single APC multi-episode spells is to use the Single Spell Grouper (Menu - Tools/Single Spell). To get an initial appreciation of grouping you are recommended to experiment with the Single Spell Grouper functionality.

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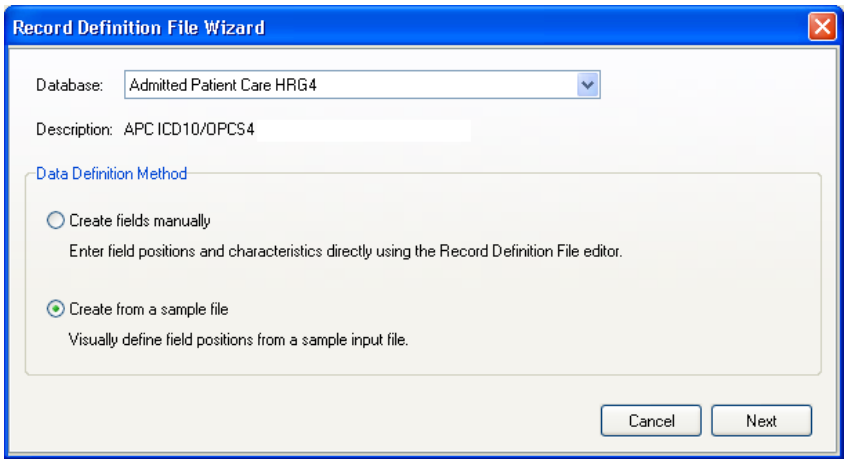
3 Record Definition File (RDF)

The RDF file tells the grouper the structure of the data you want it to process. The field content of the RDF file must include all mandatory input fields (see Annex A) for the type of data you want to group. Although these fields are mandatory, you define their order. You can also include additional fields, which will be ignored by the grouper.

The easiest way to create an RDF is to use the Wizard.

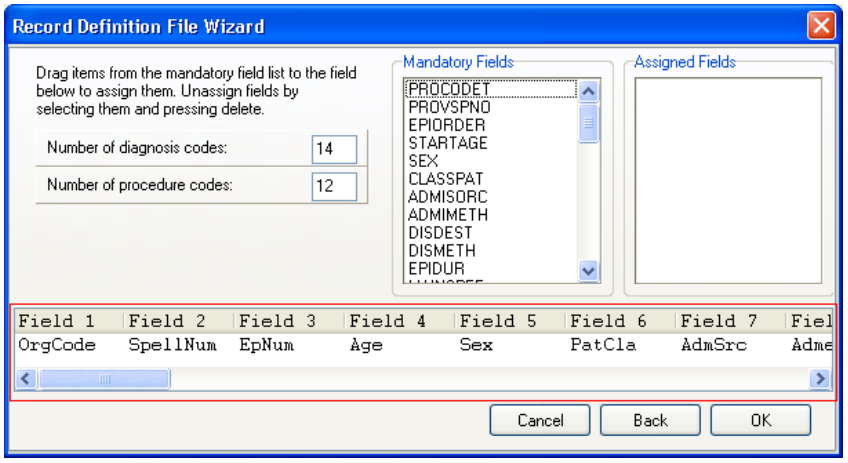
3.1 Using the Record Definition File Wizard to Create a Custom RDF

Select **'New RDF'** from the **'File'** menu
Select required **Database** (the type of input file with which the RDF will be used)
Select **Data Definition Method** (The method by which the RDF will be created).



Two data definition methods are available, these are:

- Create fields manually. This method uses a grid to define field positions and attributes. Selecting this option and clicking the 'Next' button opens the RDF editor grid where the fields can be manually defined.
- Create from a sample file (Default). This method guides the interactive creation of an RDF using a sample input file. Select the option and click Next. You will be prompted for an input file. When a file has been selected the field selection form is displayed.



The first row of the selected input file is shown in the preview area in the lower part of the form. At this stage each field is assigned a temporary field name (e.g. 'Field 1', 'Field 2').

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Depending on the data type, the number of repeating occurrences of certain fields can be increased. For example, if the input file contains 20 diagnosis codes, the value in **Number of diagnosis codes** should be set to 20 rather than the default value of 14.

All field names in the **Mandatory Fields** list must be assigned to fields in the sample input file. Fields are assigned by using the mouse to drag the field name from the list to the appropriate field in the preview area. Fields move from the **Mandatory Fields** list to the **Assigned Fields** list as they are assigned.

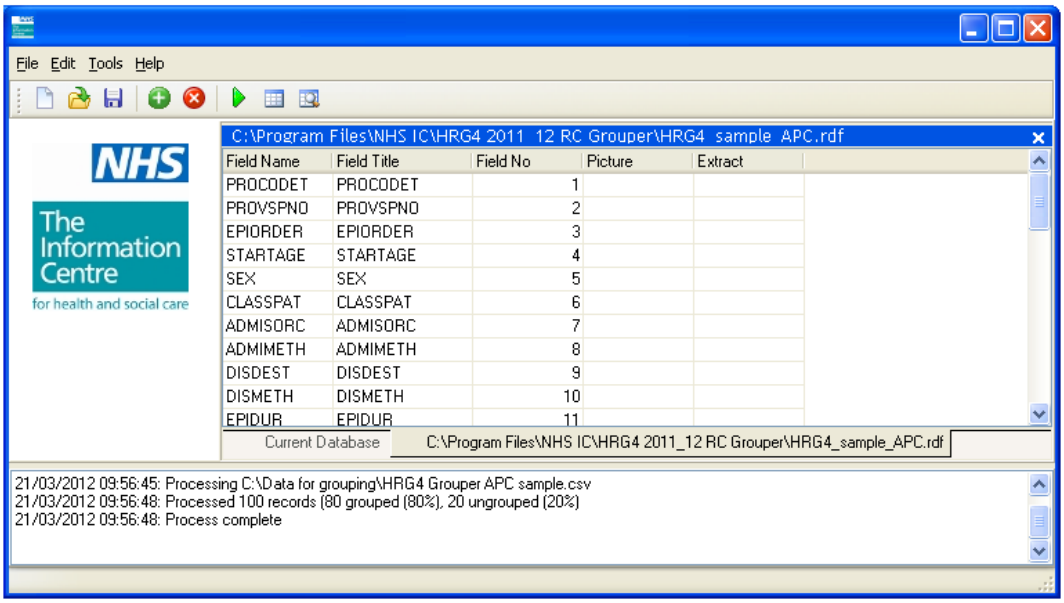
Multiple fields can be selected by clicking with the mouse while holding down the SHIFT and/or CTRL keys. The selected fields can then be dragged to the preview area.

If a field is erroneously assigned, it can be removed by selecting it in the **Assigned Fields** list and pressing the Delete key. The field will then appear at the bottom of the **Mandatory Fields** list.

When all fields have been assigned, click **OK** to proceed. The RDF will be opened in the RDF editor (see next section), allowing checking and any required amendments. Alternatively, just save the new RDF file ready for use (File/Save As).

3.2 Record Definition File Editor

Selecting **Open RDF** from the **File** menu prompts you to select a record definition file and opens it for editing.


File Edit Tools Help
C:\Program Files\NHS IC\HRG4 2011_12 RC Grouper\HRG4_sample_APC.rdf
Field Name | Field Title | Field No | Picture | Extract
PROCODET | PROCODET | 1
PROVSPNO | PROVSPNO | 2
EPIORDER | EPIORDER | 3
STARTAGE | STARTAGE | 4
SEX | SEX | 5
CLASSPAT | CLASSPAT | 6
ADMISORC | ADMISORC | 7
ADMIMETH | ADMIMETH | 8
DISDEST | DISDEST | 9
DISMETH | DISMETH | 10
EPIDUR | EPIDUR | 11
Current Database
C:\Program Files\NHS IC\HRG4 2011_12 RC Grouper\HRG4_sample_APC.rdf
21/03/2012 09:56:45: Processing C:\Data for grouping\HRG4 Grouper APC sample.csv
21/03/2012 09:56:48: Processed 100 records (80 grouped (80%), 20 ungrouped (20%))
21/03/2012 09:56:48: Process complete

The editor allows you to modify of field positions and field attributes in an RDF. The RDF columns are:

Name	Description
Field Name	A field name abbreviation for internal use; it cannot be modified.
Field Title	A field description which can be edited to display a locally-defined field name.
Field No	The field column number in the input file.
Picture	Specifies whether specific character positions in the field are used or ignored during processing. For example: “AAA.A” (in which “A” means keep the character in that position. “.” Means remove the character in that position [all without quote marks].)
Extract	Allows you to specify that specific characters (in any position) in the field are ignored during processing. (e.g. “.” Without quote marks will remove full stops from the field)

The **Insert** toolbar button inserts a new field in the RDF. This feature is provided so that non-mandatory fields can be shown using the **Display File** feature. For the purposes of grouping, it is

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not necessary for the RDF to specify the positions of all fields in the input file. Only mandatory fields need to be specified.

The **Delete** toolbar button removes a non-mandatory field from the RDF. Mandatory fields cannot be deleted.

When you save the RDF, you will be informed of any validation checks that have been failed, e.g. conflicting field positions. Validation issues must be resolved before the file can be saved.

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4 Command Line Initiation

'Command line' refers to the character-based command shell user interface within Microsoft Windows, commonly known as the DOS Window. The Grouper can process a file using the command line with parameters shown below. Mandatory parameters are enclosed within <angle brackets>; optional parameters are enclosed within [square brackets]. All parameters consist of a hyphen followed by a lower-case letter.

The command line takes the following form:

```
HRGGrouper -i<Input File> -o<Output File> -d<Record Definition
File> -l<Grouping Logic> [-h] [-t] [-p] [-r<report filename>]
```

Command line parameters:

`-i` The path and filename of the **i**nput file.

`-o` The path and filename of the **o**utput file.

`-d` The path and filename of the record **d**efinition file.

`-l` The grouping **l**ogic – a filename from the grouper directory that has the extension ".tre". This is the equivalent of picking the database in the GUI.

`-h` Optional. Where present, indicates that the input file has a **h**eader row (field names). Omit this parameter where the first row in the file is a data row.

`-t` Optional. Where present, stops generation of field names in the **t**op row of output file. If this parameter is omitted then each of the output files will contain a header row.

`-p` Optional. Where present, sets the **p**riority of the grouping process. The available values are 1, 2 and 3. 1='Normal' (Grouper priority equal to that of other applications), 2='Lower' (Grouper yields to other applications), 3='Idle' (Grouper only processes data when other applications don't require processor time).
If this parameter is omitted, the priority is set to 1 ('Normal').

`-r` Valid in Reference Costs Grouper only. Optional. Where present, specifies one of the built-in reports (see list in reports section below). The -r flag can be repeated to specify the production of more than one report. The report names are the filenames of .rgf files supplied as part of the Grouper installation. See the Reports Annex of this document for further information about the available reports.
If this parameter is omitted, reports are not produced.

`-?` Optional. Where present, directs the Grouper to list the available command line parameters to the hrg.log file in the Grouper program folder. This parameter cannot be combined with other parameters.

Where there are spaces in paths or filenames for parameter values, the parameter value must be enclosed within double-quote characters.

An example script using the command line is:

```
@echo off

C:

cd "Program Files\HSCIC\#grouperFolderName#"

HRGGrouper -i "C:\HRG Data\apc100.CSV" -o "C:\HRG
Data\output.csv" -d "HRG4_sample_APC.rdf" -l #groupingLogic.tre# -h -p 3 -r
 APCFCEReport001.rgf -r APCFCEReport002.rgf

IF %ERRORLEVEL% NEQ 0 echo Error in command, please check hrg.log

Pause
```

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5 Secondary Uses Service Grouping

The results of grouping the same data in SUS or in the corresponding local payment grouper are always the same; there is no difference in the grouping engine. Any apparent differences between your grouping of data and that in SUS are likely to be caused by:

- Exclusions. Some episodes are excluded from spells according to DH rules. Lack of such records in a spell can affect the spell level grouping results. To get the same result you may need to remove excluded episodes from the grouping run.
- Critical Care Days calculations. The SUS derivation of critical care days is much more comprehensive than documented here. It also includes a number of validation checks that could result in a slightly different number of CC days being applied which could affect grouping.
- Spell Construction. The local grouper uses the contents of the Provider Code and the Hospital Provider Spell Number fields to ensure FCEs in the spell are grouped together. SUS derives its own spell identifier and uses that in place of the Hospital Provider Spell Number. This can mean that different sets of episodes are treated as part of a spell (in reality there are few such differences).

In non-admitted care, SUS can produce two HRGs. This can occur when the derived HRG is not tariffed. An attendance HRG is calculated by a means equivalent to grouping after removal of all procedures except those starting with “X62”.

In emergency medicine, SUS produces a dummy HRG “DOA” from which a tariff is derived if the A AND E Patient Group contains value “70” meaning “Brought in dead”.

For local grouping, you are expected to group the appropriate sub-sets of ACC, NCC and PCC separately and treat their results as un-bundled HRGs as a part of the parent episode/spell. This is necessary because of the difficulties expected for many users when dealing with more complex relational input. SUS groups the combination of APC, ACC, NCC and PCC simultaneously.

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6 Additional Features

6.1 Single Spell Grouping

Selecting **Single Spell…** from the **Tools** menu opens the Single Spell Grouping form.

Single spell grouping enables the grouping of manually input data. This can be useful when exploring how certain combinations of clinical codes lead to different HRGs being derived. A database and a matching RDF must be selected in the Grouper's main screen.

The window is divided into 3 sections:

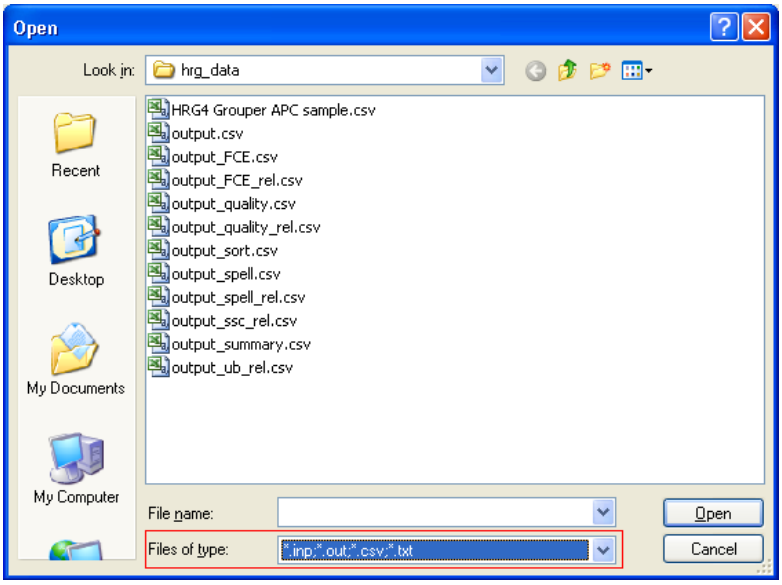
The top section is where you enter values for fields. Some have been pre-populated with commonly used / generic values but they can be changed. For APC, if you want to record multiple episodes press "Click to add record". This can be done more than once but you may need to resize the window. Again, some fields are prepopulated – normally with values given in record 1.

The middle section will show grouping results fields after you have pressed the "Group" button.

The bottom section will show any error messages that would appear in the quality when grouping a file.

6.2 The Internal File Viewer

The Grouper provides a file viewer which can be used to view Grouper output files. To access the file viewer, select **Display File...** from the **Tools** menu. This opens an open file box.



To display output files in the file list ensure that the **Files of type** drop-down list is set to "`*.inp,*.out,*.csv,*.txt`"

When a file is opened, the fields displayed are restricted to those defined in the RDF that is currently active. This means that in order to use the Display File feature to view the columns that grouping appends during file processing, an RDF must be created that includes those fields.

Double-clicking on a record within the display opens it in the Single Spell Grouping screen.

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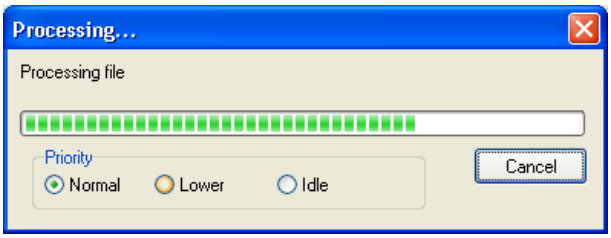
6.3 Grouper Priority

The grouping process can use a large amount of processor resource. On some computers this can make other applications slow or unresponsive during grouping. To reduce impact on other applications the Grouper's priority can be set using the radio buttons while the progress bar is displayed during file processing.



Setting	Effect
Normal	Gives the Grouper the same priority as other applications, other applications may be slowed down while the Grouper is running.
Lower	Reduces processor utilisation and gives priority to other applications.
Idle	Minimises the Grouper's use of processing resources. The Grouper will only process data when no other applications require processing resources.

Priority can be changed for the current grouping run only, each time a file is processed **Priority** will automatically be set to **Normal**.

The **Priority** options on the progress bar provide a shortcut to the thread priority settings in the Windows Task Manager. In Windows Task Manager, the same effect can be achieved by setting the grouping process (HRGGrouper.exe) priority to 'Normal', 'BelowNormal' or 'Low'.

Where the Grouper is run from the command line, the progress bar is not displayed thus there is no access to the **Priority** radio buttons. To set the priority for a grouping process run from the command line, use –p command line parameter or the Windows Task Manager as described above.

Warning: the grouping process priority should not be set higher than 'Normal' in Windows Task Manager. Setting the grouping process priority above 'Normal' might prevent Windows system services from running and could destabilise the system.

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Annex A Input File Preparation

This annex provides guidance about preparing input files for processing with the Grouper.

Note: Unless otherwise stated, the values in each field are validated against enumerated sets of values – generally based on NHS Data Dictionary definitions.

File Format: Input data must be in comma-separated value (CSV) format using the standard American Standard Code for Information Interchange (ASCII) character set, excluding the non-printing ASCII characters. The input file must not include qualifiers, such as quotes, surrounding the fields.

Using Excel for File Preparation: If some of the records end with empty fields then a file structure issue can arise when saving a text file using Microsoft Excel (for more information please refer to Microsoft Article ID 77295 "Column delimiters are missing in an Excel spreadsheet that is saved as text" [http://support.microsoft.com/default.aspx?scid=77295]). To prevent this issue arising, ensure that the final (rightmost) column of data is populated for every record in the file with 'dummy data' such as "x".

A1 Admitted Patient Care

The Grouper sorts APC data prior to processing so that records with the same Provider Code and Provider Spell Number are placed in Episode Number order.

Grouper Field Name	CDS/DD Field Name	Notes
PROCODET	ORGANISATION CODE (CODE OF PROVIDER)	A value must be supplied but is not validated. For NHS organisations use the first 3 characters for non-NHS organisations use all 5 characters.
PROVSPNO	HOSPITAL PROVIDER SPELL NUMBER	A value must be supplied but is not validated. Maximum length 24 characters.
EPIORDER	EPISODE NUMBER	A value must be supplied but is not validated. Duplicates within a spell will create an error.
STARTAGE	Derived	Whole years rounded down: START DATE (EPISODE) - PERSON BIRTH DATE
SEX	PERSON GENDER CODE CURRENT	Must be same for all episodes in a Spell.
CLASSPAT	PATIENT CLASSIFICATION CODE	Must be the same for all episodes within a Spell.
ADMISORC	SOURCE OF ADMISSION CODE (HOSPITAL PROVIDER SPELL)	Must be the same for all episodes within a Spell.
ADMIMETH	ADMISSION METHOD CODE (HOSPITAL PROVIDER SPELL)	Must be the same for all episodes within a Spell.

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Grouper Field Name	CDS/DD Field Name	Notes
DISDEST	DISCHARGE DESTINATION CODE (HOSPITAL PROVIDER SPELL)	Make sure this is properly populated, at least for the last episode in the spell.
DISMETH	DISCHARGE METHOD CODE (HOSPITAL PROVIDER SPELL)	Make sure this is properly populated, at least for the last episode in the spell.
EPIDUR	Derived	Range: 0-99999. Whole days: END DATE (EPISODE) – START DATE (EPISODE)
MAINSPEF	CARE PROFESSIONAL MAIN SPECIALTY CODE	
NEOCARE	NEONATAL LEVEL OF CARE CODE	May be blank.
TRETSPEF	ACTIVITY TREATMENT FUNCTION CODE	
DIAG_01	PRIMARY DIAGNOSIS (ICD)	Valid ICD-10 code (excluding decimal point character and any dagger/asterisk suffix). If this field is blank an error will be generated.
DIAG_02 - DIAG_99	SECONDARY DIAGNOSIS (ICD)	As above, but blank allowed.
OPER_01 - OPER_99	PRIMARY PROCEDURE (OPCS) and PROCEDURE (OPCS)	Valid OPCS-4 codes (excluding decimal point character) or blank.
CRITICAL CAREDAYS	Derived	Count of distinct days within the episode when the patient was in Critical Care. If the patient was in Critical Care on the last day of an episode that was not the last episode of the spell, assign that day to the next episode.
REHABILITATION DAYS	LENGTH OF STAY ADJUSTMENT (REHABILITATION)	Range: 0-99999 or blank. Non-numeric characters treated as zero.
SPCDAYS	LENGTH OF STAY ADJUSTMENT (SPECIALIST PALLIATIVE CARE)	Range: 0-99999 or blank. Non-numeric characters treated as zero.

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A2 Non-Admitted Consultations

Non-admitted Consultations are outpatient attendances or attendances by patients for nursing care on a ward (ward attenders). Since April 1st 2005 the Outpatient Attendance CDS has contained both of these types of data.

The field list below shows the fields required by the Grouper. The field order of the input file is defined by the Record Definition File used for the grouping session; there is no significance to the order in which the fields are listed below.

Grouper Field name	CDS/DD Field Name	Notes
STARTAGE	Derived	Whole years rounded down: APPOINTMENT DATE - PERSON BIRTH DATE
SEX	PERSON GENDER CODE CURRENT	
MAINSPEF	CARE PROFESSIONAL MAIN SPECIALTY CODE	
TRETSPEF	ACTIVITY TREATMENT FUNCTION CODE	
FIRSTATT	FIRST ATTENDANCE CODE	
OPER_01 - OPER_99	PRIMARY PROCEDURE (OPCS) and PROCEDURE (OPCS)	Valid OPCS-4 codes (excluding decimal point character) or blank.

Each row of the input file represents a single attendance.

Diagnosis Codes

Diagnostic coding is excluded from the HRG4 algorithm for non-admitted care.

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A3 Emergency Medicine

The field list below shows the fields required by the Grouper. The field order of the input file is defined by the Record Definition File used for the grouping session; there is no significance to the order in which the fields are listed below.

Grouper Field Name	CDS/DD Field Name	Notes
AGE	Derived	Whole years rounded down: ARRIVAL DATE - PERSON BIRTH DATE Validated, but not used in grouping.
INV_01 - INV_99	ACCIDENT AND EMERGENCY INVESTIGATION – FIRST and ACCIDENT AND EMERGENCY INVESTIGATION - SECOND	Valid national code component (always 2 characters) or blank. The “Local Sub-Analysis” part should not be submitted. Leading zeroes must be included where they form part of the national code component.
TREAT_01 - TREAT_99	ACCIDENT AND EMERGENCY TREATMENT – FIRST and ACCIDENT AND EMERGENCY TREATMENT - SECOND	Valid national code component (2 or 3 characters) or blank. The “Local Sub-Analysis” part should not be submitted. Leading zeroes must be included where they form part of the national code component.

Each row of the input file represents one Accident and Emergency Attendance.

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A4 Renal Dialysis (National Renal Dataset)

Renal Dialysis HRGs are generated using fields from the National Renal Dataset.

The field list below shows the fields required by the Grouper. The field order of the input file is defined by the Record Definition File used for the grouping session; there is no significance to the order in which the fields are listed below.

Grouper Field Name	DD Field Name	Notes
RENALMOD	RENAL TREATMENT MODALITY CODE	Leading zeros are significant.
RENALSITE	RENAL TREATMENT PRIMARY SUPERVISION CODE	Leading zeros are significant.
RENALACCESS	RENAL DIALYSIS ACCESS TYPE	Leading zeros are significant.
HBV	HEPATITIS B ANTIGEN STATUS (RENAL CARE)	Must be UPPER CASE. Accepted values are NEG, POS and UNK.
HCV	HEPATITIS C ANTIBODY STATUS (RENAL CARE)	Must be UPPER CASE. Accepted values are NEG, POS and UNK.
HIV	HUMAN IMMUNODEFICIENCY VIRUS STATUS (RENAL CARE)	Must be UPPER CASE. Accepted values are NEG, POS and UNK.
AGE	Derived	The age of the patient in whole years at the start date of the session. Range: 0 – 130.

Each row of the input file represents either one haemodialysis session or one day of peritoneal dialysis.

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A5 Adult Critical Care

Please see the bottom of Section 5 for a comment about critical care grouping.

The field list below shows the fields required by the Grouper. The field order of the input file is defined by the Record Definition File used for the grouping session; there is no significance to the order in which the fields are listed below.

Grouper Field Name	CDS/DD Field Name	Notes
CCUF	CRITICAL CARE UNIT FUNCTION	Leading zeros are significant.
BCSD	BASIC CARDIOVASCULAR SUPPORT DAYS	Range: 0 – 99999.
ACSD	ADVANCED CARDIOVASCULAR SUPPORT DAYS	Range: 0 – 99999.
BRSD	BASIC RESPIRATORY SUPPORT DAYS	Range: 0 – 99999.
ARSD	ADVANCED RESPIRATORY SUPPORT DAYS	Range: 0 – 99999.
RSD	RENAL SUPPORT DAYS	Range: 0 – 99999.
NSD	NEUROLOGICAL SUPPORT DAYS	Range: 0 – 99999.
DSD	DERMATOLOGICAL SUPPORT DAYS	Range: 0 – 99999.
LSD	LIVER SUPPORT DAYS	Range: 0 – 99999.
CCL2D	CRITICAL CARE LEVEL 2 DAYS	Range: 0 – 99999.
CCL3D	CRITICAL CARE LEVEL 3 DAYS	Range: 0 – 99999.
CC_Start_Date	CRITICAL CARE START DATE	Format is CCYYMMDD. e.g. 14 March 2009 = 20090314.
CC_Discharge_Date	CRITICAL CARE DISCHARGE DATE	Format is CCYYMMDD. e.g. 14 March 2009 = 20090314.

Critical Care Start Date and Critical Care Discharge Date fields are used to calculate critical care days in the Grouper output file. They are not used in HRG derivation.

Each row of the input file represents one Adult Critical Care Period.

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A6 Paediatric Critical Care

Please see the bottom of Section 5 for a comment about critical care grouping.

The Grouper sorts Paediatric Critical Care data prior to grouping so that records with the same provider code and local identifier are placed in activity date order.

The field list below shows the fields required by the Grouper. The field order of the input file is defined by the Record Definition File used for the grouping session; there is no significance to the order in which the fields are listed below.

Grouper Field Name	CDS/DD Field Name	Notes
PROCODET	ORGANISATION CODE (CODE OF PROVIDER)	A value must be supplied but is not validated. For NHS organisations use the first 3 characters for non-NHS organisations use all 5 characters.
CCLocalID	CRITICAL CARE LOCAL IDENTIFIER	This and the provider field are the key that keeps records for the same patient together. They must be supplied.
CCDate	ACTIVITY DATE (CRITICAL CARE)	Format is CCYYMMDD. e.g. 14 March 2009 = 20090314.
DISDATE	CRITICAL CARE DISCHARGE DATE	Format is CCYYMMDD. e.g. 14 March 2009 = 20090314.
DISMETH	DISCHARGE METHOD CODE (HOSPITAL PROVIDER SPELL)	
CCUF	CRITICAL CARE UNIT FUNCTION	Leading zeros are significant.
CCAC_01 - CCAC_20	CRITICAL CARE ACTIVITY CODE	Blank is valid.
OPER_01 - OPER_20	HIGH COST DRUGS (OPCS)	Valid OPCS-4 codes (excluding decimal point character) or blank. The PCC MDS specifies two appropriate procedure codes only.
DIAG_01 - DIAG_99	PRIMARY DIAGNOSIS (ICD) and SECONDARY DIAGNOSIS (ICD)	Valid ICD-10 codes (excluding decimal point character and any dagger/asterisk suffix) or blank. Not all fields are present by default; the number of fields may be specified by the user in the Record Definition File.

Each Paediatric Critical Care day is represented by a data row in the input file. Where a child moves between units with different Critical Care Unit Function Codes, a new critical care period starts; this may result in the generation of more than one critical care record for the day of transfer and consequently more than one HRG for that day.

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A7 Neonatal Critical Care

Please see the bottom of Section 5 for a comment about critical care grouping.

The Grouper sorts Neonatal Critical Care prior to grouping so that records with the same Provider Code and local identifier are placed in activity date order.

The field list below shows the fields required by the Grouper. The field order of the input file is defined by the Record Definition File used for the grouping session; there is no significance to the order in which the fields are listed below.

Grouper Field Name	CDS/DD Field Name	Notes
PROCODET	ORGANISATION CODE (CODE OF PROVIDER)	A value must be supplied but is not validated. For NHS organisations use the first 3 characters for non-NHS organisations use all 5 characters.
CCLocalID	CRITICAL CARE LOCAL IDENTIFIER	This and the provider field are the key that keeps records for the same patient together. They must be supplied.
CCDate	ACTIVITY DATE (CRITICAL CARE)	Format is CCYYMMDD. e.g. 14 March 2009 = 20090314.
DISDATE	CRITICAL CARE DISCHARGE DATE	Format is CCYYMMDD. e.g. 14 March 2009 = 20090314.
CCUF	CRITICAL CARE UNIT FUNCTION	Leading zeros are significant.
AGE_DAYS	Derived	Whole days, rounded down: ACTIVITY DATE (CRITICAL CARE) - PERSON BIRTH DATE
DISMETH	DISCHARGE METHOD CODE (HOSPITAL PROVIDER SPELL)	
GestLen	GESTATION LENGTH (AT DELIVERY)	
PERWT	PERSON WEIGHT	Kilograms, to 3 decimal places. Range: greater than zero kg and less than 10 kg. Leading zeroes are accepted (for compatibility with NHS Data Dictionary format).
CCAC_01 - 20	CRITICAL CARE ACTIVITY CODE	Blank is valid.

Each Neonatal Critical Care day is represented by a data row in the input file. Where a baby moves between units with different Critical Care Unit Function Codes, a new critical care period starts; this may result in the generation of more than one critical care record for the day of transfer and consequently more than one HRG for that day.

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Annex B Output Files

In the text below and the tables in the following pages, the output file name supplied by the user during processing is referred to as `[name]`; the remainder of the file name is a standard suffix that is appended by the Grouper.

A single input file produces a number of output files. User requirements determine which files are used; some users may not require certain output files. In most cases an output field appears in more than one file thus enabling users to select the files that best suit their needs.

Output files are produced as comma-separated text. These files may be opened with Microsoft Excel but very large files may exceed the maximum number of rows for Excel. In these cases an error message such as “File not loaded completely” will be displayed when attempting to open the file. The output files may be opened with a variety of applications, including Windows Notepad.

Relational Outputs

Relational output files can be identified by the presence of “`_rel`” as part of the filename. They are characterised by the following features:

- They include row number references in order to allow files to be linked.
- Where items are repeated (e.g. unbundled HRGs, Specialised Service Codes, error messages) this is represented by the addition of rows rather than columns – the data is normalised.

The relational output files are supplied to support users who wish to import the Grouper output into a relational database; other users may choose to ignore them – and vice versa.

RowNo Field

RowNo is an identifier that can be used to link rows in output files to rows in other output files. This is particularly useful in the case of the relational output files. Use of a system generated row number avoids problems using input values where they may not be unique.

Note that, depending on the file’s role in a relationship with another file, **RowNo** may not contain consecutive values i.e. there may be values missing; this is by design. For example, the **RowNo** values in the `[name]_spell_rel.csv` file will contain non-consecutive values where the input data contains multi-episode spells.

Iteration Field

Iteration appears in some relational output files, it is used to distinguish between occurrences within the same key value. There is no significance to the numerical values of ‘Iteration’; the values are assigned in order, being numbered ‘1’, ‘2’, ‘3’ etc.

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B1 Admitted Patient Care

There are eleven output files.

File Name/Field Name		**Description**
[name].csv		A list of all the other output files.
[name]_sort.csv		A copy of the input data after it has been sorted by Provider Code, Spell Number and Episode Number prior to grouping.
	<input data>	All of the input data, including any non-mandatory fields.
	RowNo	The generated row number of the record after sorting. This will match the equivalent fields in other output files from the same grouper run.
[name]_FCE.csv		Contains both episode and spell output fields. The spell fields are repeated for each episode in the spell; care must be taken to avoid double-counting when using spell fields.
	<input data>	All of the input data, including any non-mandatory fields.
	RowNo	Matches the run generated row number.
	FCE_HRG	The episode HRG.
	GroupingMethodFlag	The grouping method used for the spell. P=Procedure driven, D=Diagnosis driven, M=Multiple trauma, G=Global exception.
	DominantProcedure	The dominant procedure used for procedure based grouping.
	FCE_PBC	Programme Budgeting Code for the episode.
	CalcEpidur	The calculated episode duration. This is the input Episode duration minus the number of days in the input fields: CRITICALCAREDAYS, REHABILITATIONDAYS and SPCDAYS.
	ReportingEPIDUR	This field is populated by Reference Costs Groupers only. The episode duration used when generating reports. The value in this field is the same as CalcEpidur except in the case of ordinary admissions (Patient Classification=1) where CalcEpidur is zero. In these cases the value is incremented from the CalcEpidur value of zero days to one day. This reflects the fact that the reports produced by the Reference Costs Groupers are tailored specifically for Reference Costs requirements.
	FCETrimpoint	This field is populated by Reference Costs Groupers only. The trimpoint for the episode HRG.
	FCEExcessBeddays	This field is populated by Reference Costs Groupers only. The number of days by which the episode duration exceeds the trimpoint.
	SpellReportFlag	Used in Reference Costs Groupers when generating reports from grouped data. Identifies the dominant episode.
	SpellHRG	The spell HRG.

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File Name/Field Name		**Description**
	SpellGroupingMethod Flag	The grouping method used for the spell. P=Procedure driven, D=Diagnosis driven, M=Multiple trauma, G=Global exception.
	SpellDominant Procedure	The dominant procedure for the spell.
	SpellPDiag	The primary diagnosis used when spell grouping.
	SpellSDiag	The first secondary diagnosis used when spell grouping.
	SpellEpisodeCount	The number of episodes in the spell.
	SpellLOS	The spell duration used for grouping. This is the total of the CalcEpidur fields for the episodes in the spell.
	ReportingSpellLOS	This field is populated by Reference Costs Groupers only. The spell duration used when generating reports. This is the total of the ReportingEPIDUR fields for the episodes in the spell.
	SpellTrimpoint	This field is populated by Reference Costs Groupers only. The trimpoint for the spell HRG.
	SpellExcessBeddays	This field is populated by Reference Costs Groupers only. Number of days by which the spell duration exceeds the trimpoint.
	SpellCCDays	The number of critical care days in the spell.
	SpellPBC	Programme Budgeting Code for the spell.
	UnbundledHRGs	Variable number of fields containing unbundled HRGs (episode level) Unbundled HRGs appended to the end of each record. There may be zero, one or more unbundled HRGs per record. There is no significance to the order in which unbundled HRGs are output. For Specialist Palliative Care and Rehabilitation, unbundled HRGs, where there is more than one daily HRG, field consists of an HRG, followed by an asterisk, followed by number of days, rather than HRG repeated for every day; e.g. VC18Z*20 indicates VC18Z for 20 days.
[name]_spell.csv		Contains one row per spell. Includes candidate Specialised Service Codes (SSCs), Best Practice Tariff (BPT) codes and other flags generated for the spell.
	RowNo	Matches the run generated row number.
	PROCODET	The organisation code from the input file.
	PROVSPNO	The hospital provider spell number from the input file.
	SpellHRG	The spell HRG.

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File Name/Field Name		**Description**
	SpellGroupingMethod Flag	The grouping method used for the spell. P=Procedure driven, D=Diagnosis driven, M=Multiple trauma, G=Global exception.
	SpellDominant Procedure	The dominant procedure for the spell.
	SpellPDiag	The primary diagnosis used for spell grouping.
	SpellSDiag	The first secondary diagnosis used for spell grouping.
	SpellEpisodeCount	The number of episodes in the spell.
	SpellLOS	The spell duration used for grouping.
	ReportingSpellLOS	This field is populated by Reference Costs Groupers only. The spell duration used when generating reports.
	SpellTrimpoint	This field is populated by Reference Costs Groupers only. The trimpoint for the spell HRG.
	SpellExcessBeddays	This field is populated by Reference Costs Groupers only. The number of days by which the spell duration exceeds the trimpoint.
	SpellCCDays	The number of critical care days in the spell.
	SpellPBC	Programme Budgeting Code for the spell.
	SpellSSC_Ct	Number of distinct SSCs produced for the spell.
	SpellSSC1-SpellSSC7	Candidate Specialised Service Codes for the spell. Grouper does not check eligibility - please refer to Department of Health guidance for organisational eligibility. Populated by payment Groupers only.
	SpellBP_Ct	Number of distinct BPTs produced for the spell.
	SpellBP1 to SpellBP7	Candidate Best Practice Tariff codes for the spell. Grouper does not check eligibility - please refer to Department of Health guidance for organisational eligibility. Populated by payment Groupers only.
	SpellFlag_Ct	Number of distinct other flags produced for the spell.
	SpellFlag1 to SpellFlag7	Candidate other flags for the spell. Grouper does not check eligibility - please refer to Department of Health guidance for organisational eligibility. Populated by payment Groupers only.
	UnbundledHRGs	All unbundled HRGs produced for episodes in the spell. There is no significance to the order in which unbundled HRGs are output.

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File Name/Field Name		**Description**
[name]_quality.csv		Contains a row for each episode that contains an error. Where one or more episodes within a multi-episode spell contain errors, all the episodes from the spell, including those that do not contain errors, are included in the quality file. Thus there are records in the quality file that do not include error messages.
	<input data>	All of the input data for the FCE, including any non-mandatory fields, are reproduced in the output.
	RowNo	Matches the run generated row number.
	Error Message(s)	A variable number of fields, each consisting of Code Type, Code and Error Message, separated by pipe (|) symbols.
[name]_FCE_rel.csv		Episode-level output in relational form.
	RowNo	Matches the run generated row number.
	FCE_HRG	The episode HRG.
	GroupingMethodFlag	The grouping method used for the spell. P=Procedure driven, D=Diagnosis driven, M=Multiple trauma, G=Global exception.
	DominantProcedure	The dominant procedure used for procedure-based grouping.
	FCE_PBC	Programme Budgeting Code for the episode.
	CalcEpidur	The calculated episode duration. This is the input Episode duration minus the number of days in the input fields CRITICALCAREDAYS, REHABILITATIONDAYS and SPCDAYS.
	ReportingEPIDUR	This field is populated by Reference Costs Groupers only. The episode duration used when generating reports. The value in this field is same as CalcEpidur except in the case of ordinary admissions (Patient Classification=1) where CalcEpidur is zero. In these cases the value is incremented from the CalcEpidur value of zero days to one day, reflecting that reports produced by reference costs Groupers are tailored specifically for reference cost requirement.
	FCETrimpoint	This field is populated by Reference Costs Groupers only. The trimpoint for the episode HRG.
	FCEExcessBeddays	This field is populated by Reference Costs Groupers only. The number of days by which the episode duration exceeds the trimpoint.
	SpellReportFlag	Used in Reference Costs Groupers when generating reports from grouped data.
[name]_spell_rel.csv		Contains Spell-level output in relational form; one row per spell.
	RowNo	Matches the run generated row number.
	PROCODET	The organisation code from the input file.

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File Name/Field Name		**Description**
	PROVSPNO	The hospital provider spell number from the input file.
	SpellHRG	The spell HRG.
	SpellGroupingMethod Flag	The grouping method used for the spell. P=Procedure driven, D=Diagnosis driven, M=Multiple trauma, G=Global exception.
	SpellDominant Procedure	The Dominant procedure for the spell.
	SpellPDiag	The primary diagnosis used when spell grouping.
	SpellSDiag	The first secondary diagnosis used when spell grouping.
	SpellEpisodeCount	The number of episodes in the spell.
	SpellLOS	The spell duration used for grouping.
	ReportingSpellLOS	This field is populated by Reference Costs Groupers only. The spell duration used when generating reports.
	SpellTrimpoint	This field is populated by Reference Costs Groupers only. The trimpoint for the spell HRG.
	SpellExcessBeddays	This field is populated by Reference Costs Groupers only. Number of days by which the spell duration exceeds the trimpoint.
	SpellCCDays	The number of critical care days in the spell.
	SpellPBC	Programme Budgeting Code for the spell.
[name]_quality_rel.csv		Relational format includes row for each episode that contains an error.
	RowNo	Matches the run generated row number.
	Iteration	The ordinal number of the quality message.
	Code Type	The type of code that has failed validation.
	Code	The value of the code that has failed validation. Blank where the code is missing from the input data.
	Error Message	Description of the error.
[name]_flag_rel.csv		This file is populated by payment Groupers only. Includes all distinct Specialised Service Codes (SSCs), Best Practice Tariff (BPT) codes and other flags generated for the spell. Where a spell does not generate SSCs, BPT codes or Flags this file will contain no records for that spell.

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File Name/Field Name		**Description**
	RowNo	Matches the run generated row number.
	PROCODET	The organisation code from the input file.
	PROVSPNO	The hospital provider spell number from the input file.
	Iteration	The ordinal number of the SSC, BPT or other flag.
	SpellFlag	Includes all distinct Specialised Service Codes (SSCs), Best Practice Tariff (BPT) codes and other flags generated for the spell. Grouper does not check eligibility - please refer to Department of Health guidance for organisational eligibility.
[name]_ub_rel.csv		The unbundled HRGs. There are no entries for episodes that do not have any unbundled HRGs.
	RowNo	Matches the run generated row number.
	Iteration	The ordinal number of the unbundled HRG.
	UnbundledHRGs	The unbundled HRGs. There is no significance to the order in which unbundled HRGs are output.
[name]_summary.csv		A single-row file containing details about the grouping session.
	Grouper Version	Version of the Grouper that produced the output files.
	Database Version	Grouper's internal HRG database version.
	FCE Count	Number of episodes submitted.
	Spell Count	Number of spells submitted.
	FCE Error Count	Number of episodes having errors.
	Spell Error Count	Number of spells having errors.
	Run Start Date/Time	Date and time that the grouping session started.
	Run End Date/Time	Date and time that the grouping session finished.
	Input Filename	Path and filename of the input file.
	Output Filename	Path and filename selected by the user.
	RDF path and name	Path and filename of the Record Definition File used for grouping.

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B2 Non-Admitted Consultations

There are seven output files.

File Name/Field Name		Description
[name].csv		A list of other output files used for validation only.
[name]_attend.csv		The main grouped output file.
	<input data>	All of the input data, including any non-mandatory fields.
	RowNo.	The generated row number of the record.
	NAC_HRG	The attendance HRG.
	GroupingMethodFlag	Grouping method used P=Procedure driven, G=Global exception.
	DominantProcedure	The dominant procedure used for procedure-based grouping.
	AttendSSC_Ct	The count of distinct SSCs produced for the attendance (always zero because the SSC fields are not populated).
	AttendSSC1-AttendSSC5	Not populated.
	AttendBP_Ct	The count of distinct BPT flags produced for the attendance (always zero because the BPT fields are not populated).
	AttendBP1-AttendBP5	Not populated.
	AttendFlag_Ct	The count of distinct other flags produced for the attendance (always zero because the flag fields are not populated).
	AttendFlag1-AttendFlag5	Not populated.
	UnbundledHRGs	A variable number of fields containing unbundled HRGs appended to the end of each record. There is no significance to the order in which unbundled HRGs are output.
[name]_quality.csv		Contains one row for each attendance that contains errors.
	<input data>	All of the input data, including any non-mandatory fields.
	RowNo	Matches the run generated row number.
	Error Message(s)	A variable number of fields, consisting of Code Type, Code and Error Message, separated by ‘pipe’ (|) symbols.
[name]_attend_rel.csv		Output in relational form.
	<input data>	All of the input data, including any non-mandatory fields.
	RowNo	Matches the run generated row number.

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File Name/Field Name		Description
	NAC_HRG	The attendance HRG.
	GroupingMethodFlag	Grouping method used P=Procedure driven, G=Global exception.
	DominantProcedure	The dominant procedure used for procedure-based grouping.
[name]_quality_rel.csv		All error messages in relational form. None for attendances without errors.
	RowNo	Matches the run generated row number.
	Iteration	The ordinal number of the quality message.
	Code Type	The type of code that has failed validation.
	Code	The code that failed validation. Blank if code missing from input data.
	Error Message	Description of the error.
[name]_flag_rel.csv		This file is not currently populated.
RowNo		
Iteration		
AttendFlag		
[name]_ub_rel.csv		Unbundled HRGs. There are no entries for attendances without unbundled HRGs.
	RowNo	Matches the run generated row number.
	Iteration	The ordinal number of the unbundled HRG.
	UnbundledHRG	Unbundled HRG. There is no significance to the output order.
[name]_summary.csv		A single-row file containing details about the grouping session.
	Grouper Version	The version of the Grouper that produced the output files.
	Database Version	The Grouper's internal HRG database version.
	Attendance Count	The number of records submitted.
	Attendance Error Count	The number of records having errors.
	Run Start Date/Time	The date and time that the grouping session started.
	Run End Date/Time	The date and time that the grouping session finished.
	Input Filename	The path and filename of the input file.
	Output Filename	The path and filename selected by the user.
	RDF path and name	The path and filename of the Record Definition File used for grouping.

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B3 Emergency Medicine

There are five output files.

File Name/Field Name		Description
[name].csv		A list of other output files. This file is for validation only.
[name]_attend.csv		The main grouped output file.
	<input data>	All of the input data including any non-mandatory fields.
	RowNo	The generated row number of the record.
	EM_HRG	The attendance HRG.
[name]_quality.csv		Contains a row for each input record that has errors.
	<input data>	All of the input data including any non-mandatory fields.
	RowNo	Matches the run generated row number.
	Error Message(s)	A variable number of fields, consisting of Code Type, Code and Error Message, separated by 'pipe' (|) symbols.
[name]_quality_rel.csv		All of the error messages in relational form. There are no entries for records that do not contain errors.
	RowNo	Matches the run generated row number.
	Iteration	The ordinal number of the quality message.
	Code Type	The type of code that has failed validation.
	Code	The value of the code that has failed validation. Blank where the code is missing from the input data.
	Error Message	Description of the error.
[name]_summary.csv		A single-row file containing details about the grouping session.
	Grouper Version	Version of the Grouper that produced the output files.
	Database Version	Grouper's internal HRG database version.
	Attendance Count	Number of records submitted.
	Attendance Error Count	Number of records having errors.
	Run Start Date/Time	Date and time that the grouping session started.
	Run End Date/Time	Date and time that the grouping session finished.
	Input Filename	Path and filename of the input file.
	Output Filename	Path and filename selected by the user.

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File Name/Field Name		Description
	RDF path and name	Path and filename of the RDF used for grouping.

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B4 Renal Dialysis (National Renal Dataset)

There are five output files

File Name/Field Name		Description
[name].csv		A list of other output files, used for validation only.
[name]_renal.csv		The main grouped output file.
	<input data>	All of the input data, including any non-mandatory fields.
	RowNo	The generated row number of the record.
	NRD_HRG	The HRG for the dialysis record.
[name]_quality.csv		Contains one row for each record that contains errors.
	<input data>	All of the input data for the record, including any non-mandatory fields.
	RowNo	Matches the run generated row number.
	Error Message(s)	A variable number of fields, each consisting of Code Type, Code and Error Message, separated by pipe (|) symbols.
[name]_quality_rel.csv		All of the error messages in relational form There are no entries for records that do not contain errors.
	RowNo	Matches the run generated row number.
	Iteration	The ordinal number of the quality message.
	Code Type	The type of code that has failed validation.
	Code	Code that failed validation (Blank if code missing from input data).
	Error Message	Description of the error.
[name]_summary.csv		A single-row file containing details about the grouping session.
	Grouper Version	Version of the Grouper that produced the output files.
	Database Version	Grouper's internal HRG database version.
	NRD Record Count	Number of records submitted.
	NRD Record Error Count	Number of records having errors.
	Run Start Date/Time	Date and time that the grouping session started.
	Run End Date/Time	Date and time that the grouping session finished.

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File Name/Field Name		Description
	Input Filename	Path and filename of the input file.
	Output Filename	Path and filename selected by the user.
	RDF path and name	Path and filename of the RDF used for grouping.

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B5 Adult Critical Care

There are five output files.

File Name/Field Name		Description
[name].csv		A list of other output files, used for validation only.
[name]_acc.csv		The main grouped output file.
	<input data>	All of the input data, including any non-mandatory fields.
	RowNo	The generated row number of the record.
	ACC_HRG	The unbundled HRG for the ACC period. All ACC HRGs are unbundled.
	Calc_CC_Days	The number of CC days calculated as: CC Discharge Date - CC Start Date + 1 This will be set to -1 if there are problems with the dates.
	CC_Warning_Flag	Flag to indicate the result of validation of CC Start Date and CC Discharge Date. Date validation failure does not prevent HRG derivation. 'Blank' indicates valid date. 'F' indicates date validation failure; applied if any of the following are true: • Calc_CC_Days = -1. This indicates that: » CC Discharge Date is Before CC Start Date » CC Start Date or CC Discharge Date: - Is blank - Is not a valid date - Does not match the required format • CCL2 Days + CCL3 Days > Calc_CC_Days • ARSD + BRSD > Calc_CC_Days • ARSD + BRSD > CCL2 Days + CCL3 Days
[name]_quality.csv		Contains one row for each record that contains errors.
	<input data>	All of the input data for the record, including any non-mandatory fields.
	RowNo	Matches the run generated row number.
	Error Message(s)	Variable number of fields, consisting of Code Type, Code and Error Message, separated by pipe (|) symbols.
[name]_quality_rel.csv		All error messages in relational form. No entries for records without errors.
	RowNo	Matches the run generated row number.

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File Name/Field Name		Description
	Iteration	The ordinal number of the quality message.
	Code Type	The type of code that has failed validation.
	Code	Code that failed validation (blank if code missing from input data).
	Error Message	Description of the error.
[name]_summary.csv		A single-row file containing details about the grouping session.
	Grouper Version	Version of the Grouper that produced the output files.
	Database Version	Grouper's internal HRG database version.
	ACC Period Count	Number of records submitted.
	Periods Error Count	Number of records having errors.
	Run Start Date/Time	Date and time that the grouping session started.
	Run End Date/Time	Date and time that the grouping session finished.
	Input Filename	Path and filename of the input file.
	Output Filename	Path and filename selected by the user.
	RDF path and name	Path and filename of the RDF used for grouping.

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B6 Paediatric Critical Care

There are six output files.

File Name/Field Name		Description
[name].csv		A list of other output files; this file is for validation only.
[name]_sort.csv		A copy of the input data after it has been sorted.
	<input data>	All input data including any non-mandatory fields.
	RowNo	The generated row number of the record after sorting.
[name]_pcc.csv		The main grouped output file.
	<input data>	All input data including any non-mandatory fields.
	RowNo	Matches the run generated row number.
	PCC_HRG	Unbundled HRG for the PCC day. All PCC HRGs are unbundled.
[name]_quality.csv		Contains one row for each record that has errors.
	<input data>	All input data including any non-mandatory fields.
	RowNo	Matches the run generated row number.
	Error Message(s)	A variable number of fields, each consisting of Code Type, Code and Error Message, separated by pipe (|) symbols.
[name]_quality_rel.csv		All of the error messages in relational form.
	RowNo	Matches the run generated row number.
	Iteration	Ordinal number of the quality message.
	Code Type	Type of code that has failed validation.
	Code	Code that failed validation (blank if code missing from input data).
	Error Message	Description of the error.
[name]_summary.csv		A single-row file containing details about the grouping session.
	Grouper Version	Version of the Grouper that produced the output files
	Database Version	Grouper's internal HRG database version.
	PCC Record Count	Number of records submitted.
	PCC Record Error Count	Number of records having errors.
	Run Start Date/Time	Date and time that the grouping session started.

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File Name/Field Name		Description
	Run End Date/Time	Date and time that the grouping session finished.
	Input Filename	Path and filename of the input file.
	Output Filename	Path and filename selected by the user.
	RDF path and name	Path and filename of the RDF used for grouping.

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B7 Neonatal Critical Care

There are six output files.

File Name/Field Name		Description
[name].csv		A list of other output files; this file is for validation only.
[name]_sort.csv		A copy of the input data after it has been sorted.
	<input data>	All input data, including any non-mandatory fields.
	RowNo	Generated row number of the record after sorting.
[name]_ncc.csv		The main grouped output file.
	<input data>	All input data, including any non-mandatory fields.
	RowNo	Matches the run generated row number.
	NCC_HRG	Unbundled HRG for the NCC day (All NCC HRGs are unbundled).
[name]_quality.csv		Contains one row for each record that has errors.
	<input data>	All of the input data, including any non-mandatory fields.
	RowNo	Matches the run generated row number.
	Error Message(s)	A variable number of fields, each consisting of Code Type, Code and Error Message, separated by pipe (|) symbols.
[name]_quality_rel.csv		All of the error messages in relational form.
	RowNo	Matches the run generated row number.
	Iteration	Ordinal number of the quality message.
	Code Type	Type of code that has failed validation.
	Code	Code that failed validation (blank if code missing from input data).
	Error Message	Description of the error.
[name]_summary.csv		A single-row file containing details about the grouping session.
	Grouper Version	Version of the Grouper that produced the output files.
	Database Version	Grouper's internal HRG database version.
	NCC Record Count	Number of records submitted.
	NCC Record Error Count	Number of records having errors.
	Run Start Date/Time	Date and time that the grouping session started.

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File Name/Field Name		Description
	Run End Date/Time	Date and time that the grouping session finished.
	Input Filename	Path and filename of the input file.
	Output Filename	Path and filename selected by the user.
	RDF path and name	Path and filename of the RDF used for grouping.

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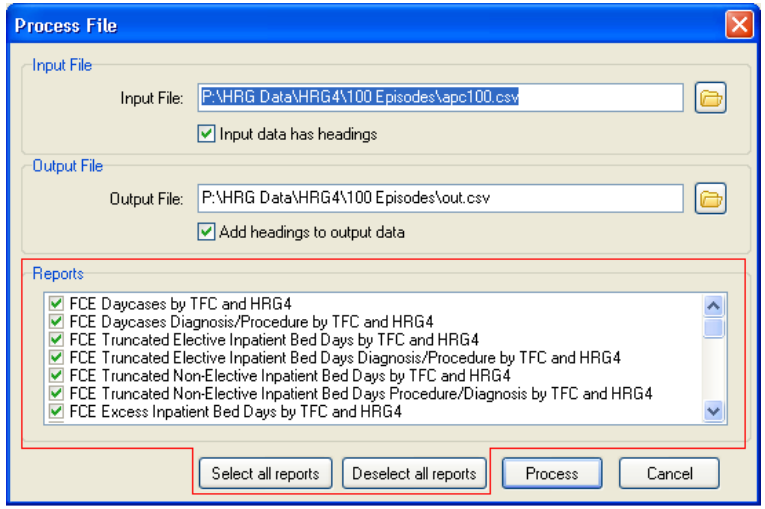
Annex C Reference Costs Reports

Reference Costs Groupers have the facility to produce reports but payment groupers do not. A reports list and associated buttons are visible on the **Process File** screen in all Grouper applications but are not functional in payment Groupers.

The reports are created specifically to support the NHS Reference Costs process and are not intended for any other purpose.

Reports are produced during grouping; the reports to be created are selected by checking the appropriate boxes in the reports list in the **Process File** screen.


Process File
Input File
Input File:
P:\HRG Data\HRG4\100 Episodes\apc100.csv
Input data has headings
Output File
Output File:
P:\HRG Data\HRG4\100 Episodes\out.csv
Add headings to output data
Reports
FCE Daycases by TFC and HRG4
FCE Daycases Diagnosis/Procedure by TFC and HRG4
FCE Truncated Elective Inpatient Bed Days by TFC and HRG4
FCE Truncated Elective Inpatient Bed Days Diagnosis/Procedure by TFC and HRG4
FCE Truncated Non-Elective Inpatient Bed Days by TFC and HRG4
FCE Truncated Non-Elective Inpatient Bed Days Procedure/Diagnosis by TFC and HRG4
FCE Excess Inpatient Bed Days by TFC and HRG4
Select all reports
Deselect all reports
Process
Cancel

Reports are produced in Microsoft Office XML Spreadsheet format and can be opened in Microsoft Excel 2002 or later.

The number of rows in an Excel worksheet is limited, depending on the Excel version. If the number of rows in a report exceeds those permitted in Excel, an error message such as ‘Problems During Load’ may be displayed.

Admitted Patient Care

Truncation

Where the report title includes the word ‘truncated’ this means that any episodes having a duration that exceeds the reference costs trimpoint use the trimpoint as the episode duration i.e. they are truncated at the trimpoint. The excess bed days report shows the total days where trimpoints have been exceeded.

Automatic Adjustments in Admitted Patient Care reports

During report generation, one day is automatically added to the episode duration of zero-length ordinary admission episodes (Patient Classification = 1). This is in line with NHS Reference Costs guidance. This does not apply to daycases.

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C1 Admitted Patient Care Episode Reports

Report Title	Specification	Command Line	Output File
FCE Daycases by TFC and HRG4	Report Data: Patient Classification = 2 (day case admissions). Report Grouping: TFC and HRG4. Report Sorting: HRG4s sorted (descending) by number of daycase FCEs.	APCFCEReport001.rgf	_APCFCEReport001.xml
FCE Daycases Diagnosis/Procedure by TFC and HRG4	Report Data: Patient Classification = 2 (day case admissions). Report Grouping: TFC, HRG4 and Dominant Procedure or Primary Diagnosis. Report Sorting: TFC numerically, HRG4s sorted (descending) by number of daycase FCEs.	APCFCEReport002.rgf	_APCFCEReport002.xml
FCE Truncated Elective Inpatient Bed Days by TFC and HRG4	Report Data: Patient Classification = 1 (ordinary admissions). Report Grouping: TFC and HRG4. Report Sorting: TFC numerically, HRG4s sorted (descending) by elective FCE bed days.	APCFCEReport003.rgf	_APCFCEReport003.xml
FCE Truncated Elective Inpatient Bed Days Diagnosis/Procedure by TFC and HRG4	Report Data: Patient Classification = 1 (ordinary admissions). Report Grouping: TFC, HRG4 and Dominant Procedure or Primary Diagnosis. Report Sorting: TFC numerically, HRG4s sorted (descending) by elective FCE bed days then procedure or diagnosis.	APCFCEReport004.rgf	_APCFCEReport004.xml
FCE Truncated Non-Elective Inpatient Bed Days by TFC and HRG4	Report Data: Patient Classification = 1 (ordinary admissions). Report Grouping: TFC and HRG4. Report Sorting: TFC numerically, HRG4s sorted (descending) by non-elective FCE bed days.	APCFCEReport005.rgf	_APCFCEReport005.xml
FCE Truncated Non-Elective Inpatient Bed Days Procedure/Diagnosis by TFC and HRG4	Report Data: Patient Classification = 1 (ordinary admissions). Report Grouping: TFC, HRG4 and Dominant Procedure or Primary Diagnosis. Report Sorting: TFC numerically, HRG4s sorted (descending) by Non-Elective FCE bed days then procedure or diagnosis.	APCFCEReport006.rgf	_APCFCEReport006.xml

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Report Title	Specification	Command Line	Output File
FCE Excess Inpatient Bed Days by TFC and HRG4	Report Data: Patient Classification = 1 (ordinary admissions). Report Grouping: TFC and HRG4. Report Sorting: TFC numerically, HRG4s sorted (descending) by inpatient FCE excess bed days.	APCFCEReport007.rgf	_APCFCEReport007.xml
Unbundled HRG4 - Admitted Patient Care	Report Data: Unbundled HRGs from all admitted patient records. Report Grouping: None. Report Sorting: HRG4.	APCFCEReport008.rgf	_APCFCEReport008.xml
FCE Truncated Non-Elective Long-Stay Inpatient Bed Days by TFC and HRG4	Report Data: Patient Classification = 1 (ordinary admissions), Episode Duration > 1 Day, Admission Methods 21, 22, 23, 24, 28, 31, 32, 81, 82 and 83. Report Grouping: TFC and HRG4. Report Sorting: TFC numerically, HRG4s sorted (descending) by Non-Elective Long-Stay Inpatient FCE bed days.	APCFCEReport009.rgf	_APCFCEReport009.xml
FCE Truncated Non-Elective Long-stay Emergency Inpatient Bed Days by TFC and HRG4	Report Data: Patient Classification = 1 (ordinary admissions), Episode Duration > 1 Day, Admission Methods 21, 22, 23, 24 and 28. Report Grouping: TFC and HRG4. Report Sorting: TFC numerically, HRG4s sorted (descending) by Non-Elective Long-Stay Emergency Inpatient FCE bed days.	APCFCEReport010.rgf	_APCFCEReport010.xml
FCE Truncated Non-Elective Long-Stay Non-Emergency Inpatient Bed Days by TFC and HRG4	Report Data: Patient Classification = 1 (ordinary admissions), Episode Duration > 1 Day, Admission Methods 31, 32, 81, 82 and 83. Report Grouping: TFC and HRG4. Report Sorting: TFC numerically, HRG4s sorted (descending) by Non-Elective Long-Stay Non-Emergency Inpatient FCE bed days.	APCFCEReport011.rgf	_APCFCEReport011.xml
FCE Non-Elective Short Stay Inpatient Bed Days by TFC and HRG4	Report Data: Patient Classification = 1 (ordinary admissions), Episode Duration = 1 Day, Admission Methods 21, 22, 23, 24, 28, 31, 32, 81, 82 and 83. Report Grouping: TFC and HRG4. Report Sorting: TFC numerically, HRG4s sorted (descending) by Non-Elective Short-Stay Inpatient FCE bed days.	APCFCEReport012.rgf	_APCFCEReport012.xml

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Report Title	Specification	Command Line	Output File
FCE Non-Elective Short-Stay Emergency Inpatient Bed Days by TFC and HRG4	Report Data: Patient Classification = 1 (ordinary admissions), Episode Duration = 1 Day, Admission Methods 21, 22, 23, 24 and 28. Report Grouping: TFC and HRG4. Report Sorting: TFC numerically, HRG4s sorted (descending) by Non-Elective Short-Stay Emergency Inpatient FCE bed days.	APCFCEReport013rgf	_APCFCEReport013.xml
FCE Non-Elective Short-Stay Non-Emergency Inpatient Bed Days by TFC and HRG4	Report Data: Patient Classification = 1 (ordinary admissions), Episode Duration = 1 Day, Admission Methods 31, 32, 81, 82 and 83. Report Grouping: TFC and HRG4. Report Sorting: TFC numerically, HRG4s sorted (descending) by Non-Elective Short-Stay Non-Emergency Inpatient FCE bed days.	APCFCEReport014.rgf	_APCFCEReport014.xml

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C2 Admitted Patient Care Spell Reports

Report Title	Specification	Command line	Output file name
Spell Daycases by HRG4	Report Data: Patient Classification = 2 (day case admissions). Report Grouping: None. Report Sorting: HRG4.	APCSpellReport001.rgf	_APCSpellReport001.xml
Spell Daycases Diagnosis/Procedure by HRG4	Report Data: Patient Classification = 2 (day case admissions). Report Grouping: None. Report Sorting: HRG4.	APCSpellReport002.rgf	_APCSpellReport002.xml
Spell Truncated Elective Inpatient Bed Days by HRG4	Report Data: Patient Classification = 1 (ordinary admissions). Report Grouping: None. Report Sorting: HRG4.	APCSpellReport003.rgf	_APCSpellReport003.xml
Spell Truncated Elective Inpatient Bed Days Diagnosis/Procedure by HRG4	Report Data: Patient Classification = 1 (ordinary admissions). Report Grouping: None. Report Sorting: HRG4.	APCSpellReport004.rgf	_APCSpellReport004.xml
Spell Truncated Non-Elective Inpatient Bed Days by HRG4	Report Data: Patient Classification = 1 (ordinary admissions). Report Grouping: None. Report Sorting: HRG4.	APCSpellReport005.rgf	_APCSpellReport005.xml
Spell Truncated Non-Elective Inpatient Bed Days Diagnosis/Procedure by HRG4	Report Data: Patient Classification = 1 (ordinary admissions). Report Grouping: None. Report Sorting: HRG4.	APCSpellReport006.rgf	_APCSpellReport006.xml
Spell Excess Inpatient Bed Days by HRG4	Report Data: Patient Classification = 1 (ordinary admissions). Report Grouping: None. Report Sorting: HRG4.	APCSpellReport007.rgf	_APCSpellReport007.xml
Note: there is no report 008 for Spells			

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Report Title	Specification	Command line	Output file name
Spell Truncated Non-Elective Long-Stay Inpatient Bed Days by HRG4	Report Data: Patient Classification = 1 (ordinary admissions), Spell Duration > 1 Day, Admission Methods 21, 22, 23, 24, 28, 31, 32, 81, 82 and 83. Report Grouping: None. Report Sorting: HRG4.	APCSpellReport009.rgf	_APCSpellReport009.xml
Spell Truncated Non-Elective Long-Stay Emergency Inpatient Bed Days by HRG4	Report Data: Patient Classification = 1 (ordinary admissions), Spell Duration > 1 Day, Admission Methods 21, 22, 23, 24 and 28. Report Grouping: None. Report Sorting: HRG4.	APCSpellReport010.rgf	_APCSpellReport010.xml
Spell Truncated Non-Elective Long-Stay Non-Emergency Inpatient Bed Days by HRG4	Report Data: Patient Classification = 1 (ordinary admissions), Spell Duration > 1 Day, Admission Methods 31, 32, 81, 82 and 83. Report Grouping: None. Report Sorting: HRG4.	APCSpellReport011.rgf	_APCSpellReport011.xml
Spell Non-Elective Short-Stay Inpatient Bed Days by HRG4	Report Data: Patient Classification = 1 (ordinary admissions), Spell Duration = 1 Day, Admission Methods 21, 22, 23, 24, 28, 31, 32, 81, 82 and 83. Report Grouping: None. Report Sorting: HRG4.	APCSpellReport012.rgf	_APCSpellReport012.xml
Spell Non-Elective Short-Stay Emergency Inpatient Bed Days by HRG4	Report Data: Patient Classification = 1 (ordinary admissions), Spell Duration = 1 Day, Admission Methods 21, 22, 23, 24 and 28. Report Grouping: None. Report Sorting: HRG4.	APCSpellReport013.rgf	_APCSpellReport013.xml
Spell Non-Elective Short-Stay Non-Emergency Inpatient Bed Days by HRG4	Report Data: Patient Classification = 1 (ordinary admissions), Spell Duration = 1 Day, Admission Methods 31, 32, 81, 82 and 83. Report Grouping: None. Report Sorting: HRG4.	APCSpellReport014.rgf	_APCSpellReport014.xml

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C3 Non-Admitted Care Reports

Report Title	Specification	Command line	Output file name
Non-Admitted Consultations (Excluding Chapter WF) by TFC and HRG4	Report Data: Non-Admitted Consultations Excluding HRG4 Chapter WF (includes data for all other HRG4 chapters). Report Grouping: TFC and HRG4. Report Sorting: HRG4s sorted (descending) by count.	NACReport001.rgf	_NACReport001.xml
Non-Admitted Consultations (Chapter WF Only) by TFC and HRG4	Report Data: Non-Admitted Consultations For HRG4 Chapter WF Only. Report Grouping: TFC and HRG4. Report Sorting: HRG4s sorted (descending) by count.	NACReport002.rgf	_NACReport002.xml
Unbundled HRG4 - Non-Admitted Consultations	Report Data: Unbundled HRG4 from all Non-Admitted Consultations. Report Grouping: None. Report Sorting: HRG4.	NACReport003.rgf	_NACReport003.xml

C4 Emergency Medicine Reports

Report Title	Specification	Command line	Output file name
Emergency Medicine by HRG4	Report Data: All Emergency Medicine. Report Grouping: None. Report Sorting: HRG4.	EMReport001.rgf	_EMReport001.xml

C5 Adult Critical Care Reports

Report Title	Specification	Command line	Output file name
Adult Critical Care by HRG4	Report Data: All Adult Critical Care. Report Grouping: None. Report Sorting: HRG4.	ACCReport001.rgf	_ACCReport001.xml

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Annex D Errors

As part of the grouping process, the Grouper carries out validation checks on many of the mandatory input fields. Where one or more fields fail validation, the Grouper derives the HRG UZ01Z (Data Invalid for Grouping).

For single-episode spells, where the episode fails validation, the error HRG is derived at both episode and spell level.

For multi-episode spells that contain a mixture of episodes that pass validation and episodes that fail validation, the error HRG is derived for each episode that fails validation and for every episode in the spell at spell level.

Details of all errors encountered are reported in a Grouper output file called the quality file. The listings in the 'Output Files' section of this document include a description of the quality file for each of the data types processed by the Grouper. The 'Input File Preparation' section provides further information regarding the field validation by the Grouper.

Details of clinical coding validation can be found in the chapter summary documentation for chapter **UZ Undefined Groups** which is available for download from the Casemix website

Error Message Format

Error messages in the quality file are displayed in three sections, the sections being separated by a pipe character. The format is a follows:

```
Code Type|Code|Error Description
```

'Code Type' identifies the field or field type

'Code' is the unrecognised value. Where an error is due to the absence of a code, this section is left blank.

'Error Description' explains the nature of the error

An example error message is:

```
ICD|P102|UZ03 - Diagnosis Conflicts with Age in DIAG_01
```

Error Types

There are three types of errors:

1) Field Validation Errors are generated where field values are missing or are outside of the accepted range of values. Example error messages of this type are:

```
ICD||Primary diagnosis is blank
ICD|XX68|Code not recognised in DIAG_01
OPCS|C992|Code not recognised in OPER_02
```

2) Spell Validation Errors result from cross checks across records in a spell. For example, where consistency checks for sex code or age are failed:

```
SEX||Not the same in all episodes in the spell
AGE||Falls in FCEs in this Spell
```

3) Clinical Coding Errors are mainly due to the use of clinical codes that do not exist in the coding system, violate clinical coding convention or are not useful resource indicators for HRG grouping.

Clinical coding errors produce error messages that contain the error category codes described in the following section.

Error Categories

Error Categories are used mainly for clinical coding errors. Critical care grouping error descriptions also include error category codes.

UZ01 Invalid Primary Diagnosis

Diagnosis code is present but should not be used in a primary position according to clinical coding conventions.

```
ICD|Z509|UZ01 - Invalid Primary Diagnosis in DIAG_01
```

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(Z509: Care involving use of rehabilitation procedure, unspecified)

UZ02 Poorly Coded Primary Diagnosis
Diagnosis code is valid as a primary diagnosis but is too vague to determine the resource use.
`ICD|T140|UZ02 - Poorly Coded Primary Diagnosis in DIAG_01`
(T140: Superficial injury of unspecified body region)

UZ03 Diagnosis Conflicts with Age
A paediatric primary diagnosis has been recorded for an adult patient (age 19 years and over).
`ICD|P704|UZ03 - Diagnosis Conflicts with Age in DIAG_01`
(P704: Other neonatal hypoglycaemia)

UZ04 Diagnosis Conflicts with Anatomical Site
Indicates an invalid combination of primary diagnosis and anatomical site. This only applies to specific musculoskeletal codes entered at 5th digit level.
`ICD|M6607|UZ04 - Diagnosis Conflicts with Anatomical Site in DIAG_01`
(M6607: Rupture of popliteal cyst-Ankle/foot)

UZ05 Invalid Dominant Procedure
Indicates invalid dominant procedure (e.g. an anatomical site) and includes the entire Y (methods of operations) and Z (anatomical sites) codes and also a number of codes in the main body system chapters.
`OPCS|Y841|UZ05 - Invalid Dominant Procedure in OPER_02`
`OPCS|W450|UZ05 - Invalid Dominant Procedure in OPER_02`
(Y841: Gas and air analgesia in labour)
(W540: Conversion from previous prosthetic replacement of articulation of bone NEC)

UZ06 Poorly Coded Procedure
Indicates a dominant or unbundled procedure that is too vague and unspecific to determine resource use from an HRG design perspective.
`OPCS|A579|UZ06 - Poorly Coded Procedure in OPER_02`
`OPCS|U019|UZ06 - Poorly Coded Procedure in OPER_01`
(A579: Unspecified operations on spinal nerve root)
(U019: Unspecified diagnostic imaging of whole body)

UZ11 Neonatal Critical Care Error
This is a general purpose grouping error for Neonatal Critical Care, generated when the input record does not meet any of the criteria in the neonatal critical care grouping algorithm.

UZ12 Paediatric Critical Care Error
This is a general purpose grouping error for Paediatric Critical Care, generated when the input record does not meet any of the criteria in the paediatric critical care grouping algorithm.

UZ13 ACC Grouping Error
This is a general purpose grouping error for Adult Critical Care, generated when the input record does not meet any of the criteria in the adult critical care grouping algorithm.

UZ14 Renal (NRD) Error
This is a general error for grouping renal activity using the national renal dataset and is generated when conditions in the grouping algorithm have not been met.

UZ21 CCAC Inappropriate in NCC
Generated when the Critical Care Activity Code is inappropriate for the Neonatal Critical Care HRG algorithm

UZ22 CCAC Inappropriate in PCC
Generated when the Critical Care Activity Code is inappropriate for the Paediatric Critical Care HRG algorithm

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Notes

When one error is found in a record, the Grouper does not stop the validation process. The grouping software aims to identify all errors and output them together.

In Admitted Patient Care data, primary diagnosis is always validated.

All clinical codes are validated against the Grouper's internal database of codes

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The HRG4 Documentation Suite

The HRG4 Documentation Suite is a comprehensive resource of supporting materials, designed to assist users in understanding the design concepts, logic and practical use of the HRG4 Grouper. Below is a list of the various HRG4 documents which are available to download from the National Casemix Office website www.ic.nhs.uk/casemix

HRG4 Companion is a starting point and general reference for new and existing users, providing an introduction to HRGs, Groupers, HRG4 design concepts and grouping logic and useful links to further information.

Casemix Design Framework defines the rules and criteria followed when designing Casemix classification systems.

HRG4 Grouper Reference Manual provides full instructions on how to prepare and group data using the HRG4 Grouper software application.

HRG4 Summary of Changes provides an overview of the main changes between the current HRG4 Grouper design and its predecessor.

HRG4 Roots workbook identifies new HRGs, deleted HRGs and changes to existing HRG Labels between designs using colour-coding.

HRG4 Chapter Summaries provide an overview of the scope, composition and grouping logic of individual subchapters along with illustrative worked examples. They also include updates on the changes within subchapters.

HRG4 Code to Group workbook provides details on all mappings between primary classification codes and HRGs. Also detailed within the workbook are the logic conditions required to generate the HRGs.

HRG4 Code to Group User Manual serves as an introduction to using the Code to Group workbook to perform manual grouping. It also details some basic design concepts and provides worked examples of a variety of different grouping scenarios.

HRG4 Chapter Listings provide details, listed by HRG, of the codes that can map to those groups, along with details of flags, lists and complications and comorbidities

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